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LISTS OF SPECIES

Fish, Ribeirão do Feijão Basin, São Carlos, São Paulo, Brazil.

Oscar Akio Shibatta
Ângela Teresa Silva-Souza

Departamento de Biologia Animal e Vegetal. Centro de Ciências Biológicas, Universidade Estadual de Londrina. CEP 86051-990, Londrina, PR, Brazil. E-mail: shibatta@uel.br.

Abstract: The Ribeirão do Feijão Basin is the main water supplier for the municipality of São Carlos, in the state of São Paulo, Brazil. Field work was carried out from February to November 2005, using sieves, casting nets, and drag nets. A total of 7,286 specimens of fish were collected, belonging to 30 species, 13 families and six orders. The richest order was Characiformes with 14 species, followed by Siluriformes with seven.

Introduction

The municipality of São Carlos is located in the central region of the state of São Paulo, Brazil, at the coordinates 21°30' to 22°30' S, and 47°30' to 48°30' W. With an area of 1,132 km^2, São Carlos has a rich hydrological network and is situated among the headways of many streams (São Paulo 2008).

The Ribeirão do Feijão, an affluent of Jacaré-Guaçu River that drains to Tietê River is included in the upper Paraná River Basin. It constitutes the main source of water supply for the city of São Carlos. Therefore, its entire basin requires constant monitoring with respect to the quality of its waters and biotic diversity.

Fishes constitute one of the most representative groups for the study of environmental quality, because they provide an overall perspective of the aquatic environment. They not only occupy various levels of the trophic chain but are also relatively easy to identify in critical situations (Karr 1981).

Since the ichthyofauna of the Ribeirão do Feijão Basin still unknown, a survey of its species was carried out, as support for subsequent studies that are being conducted. A list of the species resulting from this survey is presented in this paper.

Material and methods

For the survey, besides the main water course of Ribeirão do Feijão, five tributaries (Córrego Quebra Canela, Córrego dos Macacos, Ribeirão Laranja Azeda, Córrego São José, and Córrego do Monjolinho) were sampled, totaling 12 stations of collections. A detailed description and geographic localization of each of these stations were presented by Silva-Souza et al. (2005). The fish samplings were performed seasonally, in the period of February to November 2005, using drag nets with a mesh size of 2.0 mm between adjacent knots, casting nets with a mesh size of 2.0 cm between opposing knots and sieves with a mesh size of 2.0 mm between adjacent knots. For each stretch, a portion of 50 m was delineated, and each end was blocked by a screen with mesh size of 2.0 mm between adjacent knots, to prevent the escape of specimens. The Jaccard index (Hauer and Lamberti 1996) was used to compare the community found in this study with that described in other works.

Voucher specimens were deposited in the fish collection of *Museu de Zoologia da Universidade Estadual de Londrina* (MZUEL), state of Paraná, Brazil. Collects were authorized by IBAMA (DIREN 083/2003).

Results and discussion

A total of 7,286 specimens were collected, 398 in Córrego Quebra Canela, 4,508 in Ribeirão do Feijão, 523 in Córrego dos Macacos, 160 in Ribeirão Laranja Azeda, 1,057 in Córrego São José, and 50 in Córrego do Monjolinho. The order with largest number of species was Characiformes (14 species, five families), followed by Siluriformes (seven species, four families), Perciformes (five species, one family), Cyprinodontiformes (two species, one family), and Gymnotiformes and Synbranchiformes (only one species each), totaling 30 species, 13 families in six orders (Table 1).

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Table 1. Fish captured in the Ribeirão do Feijão Basin, municipality of São Carlos, February to November 2005.

Order Characiformes
Family Parodontidae
Apareiodon piracicabae (Eigenmann, 1907)
Parodon nasus Kner, 1859
Family Characidae
Astyanax altiparanae Garutti & Britski, 2000
Astyanax sp. *aff. A. fasciatus* (Cuvier, 1819)
Astyanax paranae Eigenmann, 1914
Bryconamericus iheringii (Boulenger, 1887)
Hyphessobrycon anisitsi (Eigenmann, 1907)
Hyphessobrycon eques (Steindachner, 1882)
Oligosarcus pintoi Campos, 1945
Serrapinnus notomelas (Eigenmann, 1915)
Family Curimatidae
Cyphocharax modestus (Fernández-Yepez, 1948)
Family Crenuchidae
Characidium gomesi Travassos, 1956
Characidium cf. *zebra* Eigenmann, 1909
Family Erythrinidae
Hoplias malabaricus (Bloch, 1794)
Order Siluriformes
Family Callichthyidae
Callichthys callichthys (Linnaeus, 1758)
Corydoras aeneus (Gill, 1858)
Family Heptapteridae
Cetopsorhamdia iheringi Schubart & Gomes, 1959
Rhamdia quelen (Quoy & Gaimard, 1824)
Family Loricariidae
Corumbataia cuestae Britski, 1997
Hypostomus ancistroides (Ihering, 1911)
Family Trichomycteridae
Trichomycterus sp.
Order Gymnotiformes
Family Gymnotidae
Gymnotus spp. 1-4
Order Perciformes
Family Cichlidae
Australoheros facetum (Jenyns, 1842)
Cichlasoma paranaense Kullander, 1983
Geophagus brasiliensis (Quoy & Gaimard, 1824)
Oreochromis niloticus (Linnaeus, 1758)
Tilapia rendalli (Boulenger, 1897)
Order Cyprinodontiformes
Family Poeciliidae
Phalloceros sp.
Poecilia reticulata Peters, 1859
Order Synbranchiformes
Family Synbranchidae
Synbranchus marmoratus Bloch, 1785

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This is a common tendency for rivers of the Neotropical region, as observed by Lowe-McConnell (1999) and Perin et al. (2007). A comparison based on the Jaccard similarity index of the results of the present study with those found by Gomiero and Braga (2006) for Corumbataí River and Jacaré-Pepira River, showed a similarity of only 30 %. These authors noted that the similarity between the rivers basins studied was low, due to the variability of the habitats and to environmental conditions. The same can be used to explain the differences between the present study and that from Gomiero and Braga (2006), since no endemism was observed.

Probably due to the fact that the environments sampled in the Ribeirão do Feijão Basin were typically streams, only small-sized species were collected, contrary to what Gomiero and Braga (2006) collected, which includes anostomids and characids (Salmininae) with a standard length over 15.0 cm.

In the Ribeirão do Feijão Basin, species were not identified for two genera: *Trichomycterus*, which could be a new species, and *Gymnotus*, which showed a color polymorphism that could signify that these latter fishes are different syntopic species. Color pattern was utilized by Castro et al. (2003; 2004) to identify the species of *Gymnotus* from the streams of Paranapanema and Rio Grande basins, in which four and three species (*G.* cf. *carapo*, *G.* cf. *inaequilabiatus*, *G.* cf. *sylvius*, and *Gymnotus* sp.) were identified, respectively. A recent study (Graça and Pavanelli 2007), however, demonstrated even the presence of *G. pantanal* and *G. paraguensis* in the upper Paraná River Basin. Considering the four color pattern of the specimens of *Gymnotus* collected, maybe they represent four different cryptic species. Therefore, more detailed studies such as a hole, using anatomy, cytogenetic, and molecular biology approaches are needed to help resolve this question.

The introduced species *Tilapia rendalli*, *Oreochromis niloticus*, and *Poecilia reticulata* were also found in the Ribeirão do Feijão Basin. It is possible that the first two originated from fish farming stations and the last due to its discard by aquarium enthusiasts.

In general, the Ribeirão do Feijão Basin appears to be poor in the number of species, when compared to the richness recorded for streams of the Paranapanema, with 52 species (Castro et al. 2003), and Rio Grande, with 64 species (Castro et al. 2004).

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